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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,624	06/02/2000	Naoya Hasegawa	9281/3660	6578

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/07/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-12

Office Action Summary

Application No.

09/586,624

Applicant(s)

HASEGAWA, NAOYA

Examiner

Kevin M Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 10-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11. 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Amendments to the specification and claims 1 - 9, filed on October 21, 2002, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. To clarify the record, the examiner notes that claims 10 – 14 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 2 and 7 – 9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a MnX alloy, does not reasonably provide enablement for any alloy “containing at least one element selected from the group consisting of Pt, Pd, ... Kr, and Mn” (i.e. a NiCr alloy would be covered by the present

claim language). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims (see specification pages 24 – 29 and claims 3 – 6).

Claim Rejections - 35 USC § 102

6. Claims 1, 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin ('767) for the reasons of record as set forth in Paragraph No. 10 of the Office Action mailed on May 6, 2002 (Paper No. 6).

Regarding the amended limitation “and that fill recesses in the free magnetic layer ... track width”, the examiner notes that this subject matter is included in claim 8 and is therefor met for the reasons of record, as applied to claim 8.

Claim Rejections - 35 USC § 103

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin ('767) for the reasons of record as set forth in Paragraph No. 12 of the Office Action mailed on May 6, 2002 (Paper No. 6).

8. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin ('767) in view of Rottmayer et al. ('673) and applicant's admissions for the reasons of record as set forth in Paragraph No. 13 of the Office Action mailed on May 6, 2002 (Paper No. 6).

9. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin ('767) in view of Rottmayer et al. ('673), applicant's admissions and Kishi et al. ('643) for the reasons of record as set forth in Paragraph No. 14 of the Office Action mailed on May 6, 2002 (Paper No. 6).

10. Claims 1 – 4 and 7 - 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rottmayer et al. ('673) in view of applicant's admissions for the reasons of record as set forth in Paragraph No. 15 of the Office Action mailed on May 6, 2002 (Paper No. 6).

Regarding the amended limitation "and that fill recesses in the free magnetic layer ... track width", the examiner notes that this subject matter is included in claim 8 and is therefor met for the reasons of record, as applied to claim 8.

11. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rottmayer et al. ('673) in view of applicant's admissions and Kishi et al. ('643) for the reasons of record as set forth in Paragraph No. 16 of the Office Action mailed on May 6, 2002 (Paper No. 6).

Response to Arguments

12. The rejection of claims 1 - 9 under 35 U.S.C § 102/103 – Lin et al., alone or in combination with various references

Applicant(s) argue(s) that Lin et al. fails to disclose the claimed structure because Lin et al. disclose a bias layer formed ***from*** soft magnetic layers and antiferromagnetic layers whereas applicant's bias layer is formed ***on*** soft magnetic layers. The examiner respectfully disagrees.

The examiner notes that applicant's bias layer is merely defined as an antiferromagnetic Mn-X alloy (specification and claims). This is identical to the layer AFM₂ in Lin et al. (col. 6, lines 45 – 50). In addition, the structural location of the soft magnetic layer (elements 41) in Lin et al. is identical to applicant's claimed structural location (i.e. between the Mn-X alloy layer and the free magnetic layer).

13. The rejection of claims 1 - 9 under 35 U.S.C § 103 – Rottmayer et al. in view of various references

Applicant(s) argue(s) that the motivation to make the non-magnetic layer an electrically conductive layer was improper. The examiner respectfully disagrees.

The examiner notes that Rottmayer et al. teaches the general structure, including a non-magnetic layer. Applicant's admit several "conventional spin-valve type magnetoresistive sensors" (page 2, 1st full paragraph) where that layer is electrically conductive. As such, the examiner maintains that there is sufficient motivation that one of ordinary skill in the art would have known to make the non-magnetic layer an

electrically conductive non-magnetic layer, especially since Rottmayer et al. does not give specific materials for use as the non-magnetic layer (implying that one of ordinary skill would know what could be used for the layer).

Applicants also argue that Rottmayer et al. teach away from the present invention because they say "[t]he etching preferably stops just after the top ferromagnetic layers **126**, **126'**, or **126''** is exposed". The examiner respectfully disagrees.

The examiner notes that had Rottmayer et al. implied no recess being formed, the language used would have been either 'the etching preferably stops just before the top ferromagnetic layer is exposed' or 'the etching preferably stops when the top ferromagnetic layer is exposed'. However, Rottmayer et al. chose the language just after the top layer is exposed, implying that the top layer is exposed, additional etching takes place briefly, **then** the etching is stopped. The examiner notes that this is clearly known in the art, as Lin et al. teach a free layer that is at least partly etched away before depositing the subsequent soft magnetic layers (*Lin et al.*, Figure 3, elements 36 and 41).

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

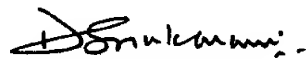
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
January 3, 2003


D. S. NAKARANI
PRIMARY EXAMINER Acting SPE